

Roy Dodge

Interview by Zachary M. Schrag

Fort Belvoir, Virginia

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Interview transcribed by US Army Corp of Engineers Office of History and edited by Mr. Schrag

ZACHARY M. SCHRAG: Zachary Schrag is interviewing General Roy Dodge. It is February 15, 2001, and we are at his home in Fort Belvoir, Virginia. It is 2:15 in the afternoon.

A first question for you -- I know a fair amount about your army career, having read your oral history interview with the Office of History at the Corps of Engineers. One thing I know, that you started out in Alabama, and your career took you into Europe in World War II. You served in the States, in Florida, at the Great Lakes. You spent time in Korea, but you also had several postings in the Washington area, at the Pentagon and Fort Belvoir, and the Army War College. Did you think of Washington as a home city for you? Did you always sort of intend to retire here?

GENERAL ROY DODGE: No, never. It never passed my mind that I would retire here. As a matter of fact, I had not decided where I would retire. My dad had always expected I would come back to Alabama and get a cottage somewhere, and he and I would fish together. But I had really not given any real consideration as to where I might retire.

MR. SCHRAG: So it was Metro that sort of made you a Washingtonian?

GENERAL DODGE: Completely, yes.

MR. SCHRAG: Did you have any feelings about the City of Washington or the Metropolitan area, even not feeling that it was your hometown, did you think that it was a nice place?

GENERAL DODGE: Oh, yes, it's a very nice place to live, very interesting with all the historical monuments, and activities downtown. I've always lived in the Northern Virginia suburb. I was here in 1948-51, stationed at Fort Belvoir on the staff of the Engineer School -- faculty and staff of the Engineer School. Then when I came back, we lived in Arlington. I was in the Pentagon with guided missiles and special weapons at that time.

Then I came back -- actually I was stationed in Chicago, and I was here on a promotion board, temporary duty, when Jack Graham called me and asked me if I wanted to be chief engineer at the Metro. So I jumped at the chance.

MR. SCHRAG: Had you known Graham before?

GENERAL DODGE: Yes. My last station, my last active duty job, I worked for him on the civil works part of my job. I worked for another general on the military work. But he knew me through that connection.

MR. SCHRAG: And just to understand a little bit more about how the Corps was organized, the chief of engineers was a lieutenant general.

GENERAL DODGE: Yes.

MR. SCHRAG: Then there were how many major generals?

GENERAL DODGE: They had a deputy who was a major general, and a major general who was head of civil works -- that's flood control and navigation -- and another major general, usually a major general, who was head of military construction. Then you had the field officers divisions headed by brigadier generals primarily. One or two are major generals.

And then below the divisions were districts, which were headed by colonels.

MR. SCHRAG: So when I talk about Graham's career, when he was head of civil works, that was one of the top four posts.

GENERAL DODGE: Yes. He was one of the top four there.

MR. SCHRAG: I have a number of questions about your own career, also a number of questions about Jackson Graham's career because there seems to have been very close parallels in that you both got your commissions through ROTC rather than West Point, you both served in combat during the war, you both rose through a number of positions back here in the States, and then

both went to Metro at the same time. So I hope you can tell me something about that experience.

Now, as I understand it, General Robert E. Mathe, who was the last engineer commissioner for the District of Columbia, chose Jackson Graham, and Graham chose you. Then there are all these other Corps of Engineers transplants - [William S.] Alldredge, [John] Ansley, [Joseph] Garbarcz. Who was responsible for recruiting you?

GENERAL DODGE: Jack Graham. He lined it all up himself.

MR. SCHRAG: So as Director of Civil Works, he knew sort of everyone in the Corps, and could pick his favorites.

GENERAL DODGE: Yes. The only one I was directly -- most of them, he would talk to me about. But he was the one who made the initial approach to them. The only one that I was directly instrumental in the initiation was John Egbert, who was my successor. Carmen Turner was the general manager at the time, and when I announced that I was going to retire, she asked me did I know anybody in the Corps that I could recommend. I called the Chief of Engineers and then John Egbert, and sure enough, he became my successor.

MR. SCHRAG: So how did you find that transition from the army to WMATA? What kinds of things were the same and what were different?

GENERAL DODGE: It was almost all the same. Working with Jack Graham, the way he set it up was what I was accustomed to. One of the first things he said was, "Now, you are Mr. Dodge. There is no general here. You are Mr. Dodge. Don't forget that."

MR. SCHRAG: But everyone called him general, is what I have been told.

GENERAL DODGE: They weren't supposed to. He told them not to.

MR. SCHRAG: What were the biggest surprises about shifting over to a civilian agency?

GENERAL DODGE: I guess you might say I had a little more freedom. We had no army regulations and whatnot. We set our own rules. But we patterned them after all we had learned in the army about having reviews, and counter-balances to make sure everything was kept on the up and up.

MR. SCHRAG: I've heard that a couple of times, that the Corps had this very clean reputation, and I'm not quite sure what the alternative was. Were people worried about kickbacks from contractors, or political influence from politicians?

GENERAL DODGE: Well, favors of one type or another.

MR. SCHRAG: Favors to whom?

GENERAL DODGE: I don't know. There was a lot of leeway in what engineering firms you would select to design various sections, and we always formed a team to a selection board, and always more than one person would meet with a contractor in order to make sure there was no one-on-one deals anywhere.

There are a couple of news articles I kept on a plaque back there that I'd like you to read when you leave. It dwells on this subject of integrity of the system.

MR. SCHRAG: Okay. That would be very helpful. So a lot of it was just making sure that through procedures there would be no opportunity for a contractor to influence --

GENERAL DODGE: Yes, any undue influences. One of the big things I noticed when I first came, someone would call a meeting. I can remember one person, one of the architects called a meeting and I went to it, and these issues came up, and I made a decision. "Okay, we'll do this, that, and the other." "Oh, you can't make a decision. We're just here to talk about it."

Half the people would show up 30 minutes late for the meeting. I soon got that in hand. If we're going to have a meeting, everybody get there at the same time, and if there's an

issue, let's resolve it, come to closure with it. Don't just chew it around and then go off and come back another day.

MR. SCHRAG: So was that a sort of army way of doing things?

GENERAL DODGE: Well, yes, if you've got a problem, solve it. Come to closure on it.

MR. SCHRAG: Now, it seems to me one of the differences might have been the use of consultants. Did the Corps of Engineers have engineering consultants?

GENERAL DODGE: The Corps of Engineers was mostly in-house. Each office had its own engineering design forces, its construction inspectors. When Jack Graham set it up, we had in mind it would be a very short term operation, like 10 years. So it wasn't long enough to hire a big staff, and then at the end of 10 years let them go. So we set out to have a small staff, and do all of the design and inspection by contract. It worked out well.

MR. SCHRAG: I know a little more about the DeLeuw-Cather role because I've talked to some of their people. What was the role of Bechtel? I'm not entirely sure about that.

GENERAL DODGE: DeLeuw reviewed all of the design. Bechtel supervised the construction. Once it was designed,

Bechtel took over to watch the construction and supervise the contractors, inspect.

MR. SCHRAG: So how was that job of overseeing the construction divided between the in-house WMATA staff and the Bechtel people?

GENERAL DODGE: Well, Bechtel had the entire responsibility. On each contract they had an individual who was the resident engineer. He had inspectors. And then on my staff, I had an office of construction -- director of construction, and each of the -- well, maybe six or so contracts would be under one individual in my staff office. But he dealt through the Bechtel resident engineers.

MR. SCHRAG: So they were --

GENERAL DODGE: Direct contact with the contractor was through Bechtel, until we got to maybe a contract dispute or whatnot and then it was our people versus the contractor.

MR. SCHRAG: But it was Bechtel's job to make sure that everyone was on schedule, doing what they were supposed to be doing?

GENERAL DODGE: Complying with the terms of the contract.

MR. SCHRAG: Had that been the original design? I think I had heard somewhere that Bechtel was brought on later, that they were not part of the original plan.

GENERAL DODGE: Yes. Let's see, now, we started out with DeLeuw-Cather handling it. DeLeuw would supervise the design, and then supervise the construction as well. But that became too much of a job, too large. So we took it away from DeLeuw-Cather and gave it to Bechtel.

MR. SCHRAG: It seems that a lot of your job was just managing the enormous scale of this project; that is, the rhetoric at the time was that it was the largest single public works project ever undertaken. How did you decide what to do when, how to do the phasings of the different segments? Did your experience with the Redstone missile at all help, because I know that you had worked on that for a very large, very complex engineering project.

GENERAL DODGE: Well, I suppose it was part of my background and way of thinking, way of operating. Again, DeLeuw-Cather was our general engineering consultant, and part of the general plans were to break the system into segments, and set up a general schedule of which would come when. Of course, that had to be altered if you couldn't get your real estate, or if you

couldn't get the jurisdictions to agree with where something was going. You would have to keep juggling the schedule.

But they came up with a master general plan to break it down into pieces, and which piece would be built first. And then each segment, we would engage another contractor to do the detailed design, and then advertise it for contract.

MR. SCHRAG: Whose job was it then to sort of keep the big picture in view and make sure that the whole project was going on schedule?

GENERAL DODGE: I guess you could say it was mine. I had an Office of Program Control, and they in large measure did that part of keeping track of the program. Through program control, I kept an overall view of the thing.

MR. SCHRAG: So as a construction job, obviously Metro was politically very difficult, getting all the funds together, and getting the jurisdictions in agreement. As a physical engineering job, was it difficult, or because you were relying on pretty much known, trusted technology, was it a fairly straightforward process?

GENERAL DODGE: Well, we had our difficulties. The rock formation under Connecticut Avenue was -- I'm not a geologist, but it was laminated shale, on an angle. So we were cutting across this shale, and in one case we had a cave-in on

Connecticut Avenue. But we had to be very careful in pinning this shale together to keep it stable.

Once you had an arch in, it was solid and stable, but when you cut through it at first, there was a tendency for some slippage. So that was one problem. And, of course, the Potomac River is at sea level, so all of the downtown construction was below sea level. So you've got the water problem to deal with.

Some of the earth tunneling out in Southeast Washington, toward the south and east, there was not very solid material. We never had to use compressed air to keep it from coming under the tunneling, but we had to take very careful steps, and in some cases even freeze the ground around to keep it stable until we got our shield through.

MR. SCHRAG: How did you do that? How do you freeze the ground?

GENERAL DODGE: Pump refrigerant down into pipes to the ground, and put an ice shield around it.

MR. SCHRAG: In addition to all the physical, geological obstacles, you also had various human obstacles -- old streetcar tracks, and utilities to be --

GENERAL DODGE: The utilities was a major problem. Twelfth and G is the communication center of the United States, I guess, and there are all sorts of sewer lines, water pipes,

communication lines, gas pipes, electrical conduits, and we had to maintain all of that in place while we dug around it and opened up down to the level of our tunnel.

So maintaining all those utilities without disrupting them was a major problem. I remember once -- I don't know whether it was a lunar landing, or one of the big astronaut NASA shots -- they asked us to stop all construction just as a safeguard that we didn't cut anything that would endanger it. We didn't cut anything anyway, but we did lay off until they got it underway.

MR. SCHRAG: Now, this was just my wild imagination, but when I was reading your army interview, I know that you spent a lot of 1944 de-mining mine fields, and somehow that seems like a comparable process, where there is a big underground obstacle course, and you don't quite know what's out there, and you had to find your way through it. Would that be a fair comparison, or how would you compare those experiences?

GENERAL DODGE: Except for one thing -- with the mine fields you don't know where they are. With the utilities, you have plans. They may not be quite where the plans say they are, but you do have plans to start with.

MR. SCHRAG: So most of the plans were mostly accurate?

GENERAL DODGE: Yes, pretty much.

MR. SCHRAG: What were the sort of worst moments? I know that the flooding of L'Enfant Plaza in 1977 must have been--

GENERAL DODGE: Yes, it was after we had started our first operation. Yes, that was pretty hairy for a while. I remember going down -- I got a call during dinner from my security officer, and he said, "There's been a cofferdam failure on the Washington Channel here. I guess you know what a cofferdam failure is." I said, "I sure do."

So I went down right away, and I stood at L'Enfant Plaza. As a matter of fact, there was a picture on the front page of the Post of me and the Bechtel supervisor on the L'Enfant platform watching water gurgle up through the tracks there. You could stand down there and look up whatever that street is that leads down to the water, and there was a line of trucks as far as you could see, loaded with material. The contractor worked very expeditiously, and they were coming down and dumping material around the cofferdam failure. They got it stopped, but I guess it was about 4 o'clock in the morning before we got it stopped.

MR. SCHRAG: So was that the worst of the worst?

GENERAL DODGE: I think so, yes. We did have this cave-in up on Connecticut Avenue, but that was minor compared to what this could have been. We had to stop operation on one of the lines there for a while. It was covered with water.

But as I said, the whole area -- the whole system is below sea level, and the whole thing could have been flooded if we hadn't gotten it stopped.

MR. SCHRAG: One of the things that is very interesting to historians about this period in engineering is that Metro is built at a time when there is -- the National Environmental Policy Act (NEPA) comes in in 1969, and requires environmental impact statements. There are provisions for the handicapped that, of course, impact Metro, and a lot of other legislation around 1970, and also just a lot more, it seems, community involvement. That is, when they built the New Jersey Turnpike, it seems that the engineers were really in control and didn't have to worry too much about public opinion, whereas with Metro you had all sorts of lawsuits, and protests, and all kinds of things.

So I wonder if you could comment about whether this was a really big change in the late 1960s and early 1970s, or whether, for example, when you were in Jacksonville you would have the same kinds of experiences dealing with neighbors and civilians there.

GENERAL DODGE: Well, this environmental concern has been growing all along, and I think it's gone up geometrically since the late 1960s, I guess. Just looking back, I think we got

underway before there was quite as much environmental concern. As a matter of fact, we built quite a bit of the system before this handicap thing came up, and we had to go back. I think there was about \$30 million -- we had to go back and retrofit about six or eight stations to put an elevator in. And from then on we had elevators in all of them.

So the environmental part -- I think we got ahead of the big concern, but perhaps along about the middle of our construction, environmental became a big issue, and we had to make an environmental impact study. But from the very outset we had a public hearing on every section before we would put it out for design. Countless public hearings. Almost ever night we would go to a public hearing, and people would get concerned about things that shouldn't have been a concern, but we were somebody new and they didn't know us.

MR. SCHRAG: What kinds of things should not have been concerns?

GENERAL DODGE: I can't think of the issues now. Did you ever hear of Sammie Abbott?

MR. SCHRAG: Yes.

GENERAL DODGE: Sammie Abbott showed up at every one, and he would rant and rave about imaginary things, I guess. Nothing we were going to do would have been any concern, but he

was upset about everything. I can't remember specific issues right now.

Of course, everyone didn't want their neighborhood disturbed. If you're going to dig up a street, well, couldn't we do that street or this street, not mine. And downtown there, around Connecticut Avenue and up G Street, there were a lot of businesses that were -- well, they were distressed to some extent by our presence. We had the entire downtown torn up with planking -- plank decking on all the streets, which was a very poor way of getting around town, but it worked.

MR. SCHRAG: So I guess my question there is what was the legitimate role of a public hearing? That is, do you think that ordinary folks who don't know much about engineering have anything to contribute?

GENERAL DODGE: No. Legitimately, we would present here is what we are going to do, and we were sincerely seeking public opinion of anything that they wanted considered, and we did consider things that they would bring up -- where the entrances should be, and how much parking. Anything anybody had to say, we would consider putting into our plan if possible and appropriate.

MR. SCHRAG: So where do you draw the line, then, between that kind of informed, helpful public opinion and the more not-in-my-backyard approach, rabble rousing?

GENERAL DODGE: I guess our considered judgment, is all I can say.

MR. SCHRAG: And was there a difference of opinion within the authority; that is, for example, the tapes I've heard of Jack Graham and the comments he made at the time, he seemed to get really angry at people who were concerned about wheelchair access, or on Yuma Street where they sued about the noise, whereas when I talked to Vernon Garrett, he sounded like he just sort of took it as it came and shrugged it off a little more.

GENERAL DODGE: I don't know that Jack was angry. He was a man of determination, though. He didn't want anything to delay us. Maybe you heard that when they insisted that we have access for the wheelchairs, and I went with him, we went out to Dulles Airport, and he rode a wheelchair up and down the escalator to show that if the wheelchairs really wanted to ride, they could use the escalators. That was a little far out.

MR. SCHRAG: Yes, so what did you think about -- I mean, why would he do that? Do you think he was being --

GENERAL DODGE: A show for him, an able-bodied person, but that was not an answer. No. None of us considered it that. That was part of Jack's personality.

MR. SCHRAG: Okay, so he was alone in believing that was a real --

GENERAL DODGE: Yes, nobody agreed with him on that. We didn't press that at all.

MR. SCHRAG: This is one of the things -- I want to be fair to Graham, but it seems to me that he's like a Shakespearean hero in that his greatest strength of being decisive could also be his greatest flaw in being decisive.

GENERAL DODGE: I don't know whether I'd put it that way or not. I really wonder if he sincerely thought that would be an answer. I don't know. In my mind, that would never go, not with anybody. It was never seriously considered.

MR. SCHRAG: Let me ask you this -- was there anything in your army career, or in Graham's, that really would have prepared you for building a project of this scale in a city full of people? It seems to me that the classic Corps project was a waterway or erosion control, something more in a wilderness area, rural area, and you would have a few conservationists show up and claim that you were draining the Everglades, but you wouldn't be building right through people's neighborhoods.

GENERAL DODGE: I think you're right. Yes, most of the Corps projects were away from town. Now, there were cases where on a big dam you would have to move the town because you're going to flood the area where the town was. But by and large, it was a rural rather than urban type construction. That's true.

MR. SCHRAG: Was there any sort of formal training within the Corps showing how do you deal with the neighbors?

GENERAL DODGE: Yes. One of the duties I had both in Jacksonville and in Chicago was to conduct public hearings before we would grant permits to any industry. A bridge across Tampa Bay is one example -- we had to have a public hearing to see if there were objections that were overriding to the need for the bridge.

A public hearing on the south end of Lake Michigan I conducted on -- Bethlehem Steel wanted to -- they had a plant in Indiana at the south end of Lake Michigan, and they wanted to expand that. I had to hold a public hearing because primarily they wanted -- it was a matter of preserving the dunes and the natural area of the dunes, and they didn't want anything to interfere with that.

So holding public hearings for construction projects was part of our routine. Yes.

MR. SCHRAG: Okay.

GENERAL DODGE: The construction we were going to do, or for us to grant a permit to some private industry to do construction.

MR. SCHRAG: I guess what I'm trying to figure out -- again, this is just something that historians have been debating recently -- is whether the requirement for an environmental impact statement was vastly more rigorous than that public hearing process, or whether it was more of a gradual increase in sensitivity toward environments and neighborhoods and all the rest.

GENERAL DODGE: I don't know how to answer that. I think we are paying a lot more attention to the environmental impact now than we did 30 years ago, 40 years ago. A lot more attention to it.

MR. SCHRAG: Beyond public hearing level, you had to deal with politicians -- Metro as a whole did, that is. One of the things -- I understand that in the first Natcher delay, that delayed ground breaking, obviously you couldn't really do much of anything except strengthen the one sewer or whatever it was.

GENERAL DODGE: Yes, Lydecker Tunnel. We relined the Lydecker Tunnel so that it wouldn't get crushed as we went across the top of it.

MR. SCHRAG: But there you were just sort of trying to find something to do while Natcher prohibited you from doing actual transit work. After he released the funds, you broke ground in 1969. You worked through 1970. And then he held up the funds again in 1971. What I'm a little confused about in that period is how serious a threat that was, because at some point the authority ran out of enough cash to authorize new contracts.

GENERAL DODGE: We had to sell bonds there for a while, didn't we? Yes. When was it that the Three Sisters Bridge was -- was that before we broke ground?

MR. SCHRAG: That was twice. I mean, that's the thing. There was one dispute in 1969 that prevented you from breaking ground, and then again in 1971 that prevented you from authorizing new contracts. And after the first one you said well, we lost 14 months but I think we can still open this thing by 1974. And then after the second one you said well, I think we're going to have to push back the opening date.

GENERAL DODGE: There was one, and I think this is disgraceful -- one where he would not release funds until the D.C. Council agreed to let the Three Sisters Bridge be built. So they agreed, and the contract was let for the D.C. side abutment, and he released the funds, and then the D.C. Council reneged. I thought that was disgraceful. But that was one case that I

remember. He did release the funds based on their agreement, and then they welched on their agreement.

MR. SCHRAG: So you think it was disgraceful of the D.C. Council to go back on the agreement.

GENERAL DODGE: Yes, once they had done it. I'm glad we didn't build the bridge, because I don't think we needed it. But to have agreed -- if they were just using that as a ploy to get the funds, that was not good. But that's what happened. And we were not a party to that, Metro was not. Was that before we broke ground?

MR. SCHRAG: That was before you broke ground.

GENERAL DODGE: That was not the 1971 one.

MR. SCHRAG: And then in 1971 --

GENERAL DODGE: I've forgotten what happened in 1971.

MR. SCHRAG: What happened in 1971 is the Council held firm that time, and Natcher was defeated in Congress.

GENERAL DODGE: I had forgotten exactly how that worked out.

MR. SCHRAG: I was just wondering sort of from your own point of view because you said -- I mean, it seems that in 1969 there is this fight between Natcher and the D.C. Council, and WMATA is trying to not get involved, but of course, it was involved.

GENERAL DODGE: We wanted our funds.

MR. SCHRAG: And again, I just want to know how you felt about that, about watching these politicians argue with each other while you're stuck not being able to --

GENERAL DODGE: Well, I guess you would say it was very discouraging. We were anxious to get going, and it cost us a lot of money. You remember, inflation went up to double digits. I think it was 12 percent, or even up to 16, I think. I know I was getting 16 percent interest on some of my money market funds. So the price just shot up.

I retired in 1978, and we had reached the point where I think we had about 8,000 people working -- at one time 8,000 people working about placing about \$500 million a year, and in 1978 the funds began to taper off, and the work slowed down. That's one reason I retired -- well, two reasons. One is I was tired of the high pressure work and I wanted to go play golf, hunt, and fish. But the other was it was built up, and now we were sort of trailing off and it was becoming less interesting.

MR. SCHRAG: And was it trailing off because funds were being put in --

GENERAL DODGE: Yes, funds.

MR. SCHRAG: Because also it seems like in that peak period, around 1973-74 was when you built the downtown section,

and a lot of the Connecticut Avenue tunnels, whereas after that, a lot of it -- more of it was above ground. I guess in Arlington you still had a lot of underground work to do.

GENERAL DODGE: Of course, it went much faster than tunneling. But we did build up, and then start to taper off, and then it just drug out until 2001.

MR. SCHRAG: So you thought it was just going to be less fun to be in an agency that was --

GENERAL DODGE: That, plus I was getting up in years, and it had been high pressure for 11 years, and that was a pretty high pressure job. I liked to play golf, hunt, and fish.

MR. SCHRAG: Since we're on the subject of your retirement, Ted Lutz said that he was afraid that when Graham retired -- or people were afraid that when Graham retired that you might go with him and leave the agency without any continuity, and that he thinks you made a tremendous contribution by staying those two years.

GENERAL DODGE: Graham leaving had nothing to do with my leaving. It was time that I was going to leave then. I think I was quoted as saying that, not to take anything from Ted Lutz, but he was not an engineer. If I had a problem, I could go to Jack Graham and get his judgment to back up my opinion, and I couldn't do that with Ted because he was not an engineer. But I

had great admiration for Ted. I would have worked for him very pleasantly.

MR. SCHRAG: You had no problem working for this long-haired kid, 31 years old?

GENERAL DODGE: No, I didn't.

MR. SCHRAG: Do you have a sense of why Graham retired, what finally made him decide that it was enough?

GENERAL DODGE: He was very close about any personal matters he had. I don't know whether he had a problem with some of the board members or not, but he retired very suddenly, and I have heard, and this is strictly hearsay so I don't know, that he was expecting to be asked to stay on, and was not asked to stay on. I don't know where I heard that.

MR. SCHRAG: That is, he thought his resignation letter might be refused?

GENERAL DODGE: Refused, yes. I don't know where I heard this. Certainly not from him.

MR. SCHRAG: Did you yourself have dealings with the board at that point, or would it all go through Graham?

GENERAL DODGE: Every Thursday morning we had a board meeting, and I was usually the principal actor. I would have 12 or 15 matters to bring before the board and debate with them about. Anything over -- it seems to me it was \$100,000 -- any

action -- contract action I had to take that was more than \$100,000 I had to go to the board and get approval, and that meant convincing them that what I wanted to do was justified. I always had a very good relationship, good rapport with them. No problem with any of that.

The biggest problem we had was our contract with the train control. We had three bids -- G.E., Westinghouse, and Union Signal. We received the bids without money first for technical adequacy, and Westinghouse gave us a bid that was not what we were asking for. They were giving us the San Francisco system and just hoping we would take it, and we rejected their bid as being not responsive. They didn't bid what we asked for.

Well, I think it was Johnson, the vice president of Westinghouse, went to every politician in the area and tried to make his case that he had been unjustly rejected. So the board acceded to having him appear before them and present his case, and I presented our case, and we won.

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As a matter of fact, San Francisco had trouble. They had to refit the whole system. So we were vindicated.

MR. SCHRAG: So what was the key difference there between the BART system and WMATA?

GENERAL DODGE: It's something I technically don't fully understand, but we wanted a digital system and they were giving us an analog system. Maybe you know that better than I.

MR. SCHRAG: Not particularly well.

GENERAL DODGE: Digital is either yes or no, yes or no. Analog is about, more or less.

MR. SCHRAG: So that's interesting. So you yourself were not expected to master the technical details.

GENERAL DODGE: That's what I hired these consultants for, yes.

MR. SCHRAG: Okay, so you had consultants and staff doing that.

GENERAL DODGE: Yes. Union Railway Signals is the outfit that we gave the contract to.

MR. SCHRAG: But who was deciding that you really needed a digital system? Was that DeLeuw-Cather?

GENERAL DODGE: We hired an engineering firm who specialized in this signal -- in train control and signals, and they designed the system. Between DeLeuw-Cather as the general consultant and this outfit -- General Railway Signal? Anyway, they were the ones who came up with this, and they were certainly right in prescribing the one we had.

MR. SCHRAG: And since we're on the subject, were there other cases like that where you were either drawing positive or negative examples from other transit systems like BART?

GENERAL DODGE: We were the closest to BART of any other system I know. We went out there, and a good friend of mine was in charge of the BART -- had my job at BART.

MR. SCHRAG: Who was that?

GENERAL DODGE: Dave Hanland. Dave Hanland. And we patterned a lot of our things after them, I think mostly. But we were unique in most of it. I don't think there is another system like it.

MR. SCHRAG: Well, every system has its own --

GENERAL DODGE: They're all custom made.

MR. SCHRAG: Custom made, yes, except -- I mean, my impression was -- maybe this is wrong, but at some point the Urban Mass Transit Administration tried to push for a little more uniformity. For example, they didn't want everyone with a different rail gauge, so that maybe Baltimore and Washington could order their cars together was the idea.

GENERAL DODGE: I don't think there was a problem with different gauges, but every system has its own rail car. And if all the systems used the same rail cars, you would have a much better competition in price, I guess. But in our case, we

ordered 300 cars at the outset, and this is the only 300 that this company is going to build, so they don't have any continuity.

If all the systems used the same kind of car, it would certainly be with some economic benefit.

MR. SCHRAG: Yes, it seems to me that the rail cars have always been the weak link in the chain; that is, you were delayed -- I understand that you were delayed at opening in 1976 because of defects in the cars, and delays in getting them, delayed by a few months.

GENERAL DODGE: I don't remember that. You may be right.

MR. SCHRAG: Then around 1983 or something, maybe it was a Huntington line couldn't open because of lack of cars. That delays that opening for six months.

GENERAL DODGE: And we are short cars now.

MR. SCHRAG: Today you open up the Branch Avenue line, and everyone is complaining because there aren't enough cars.

GENERAL DODGE: Those things needed more lead time on the order.

MR. SCHRAG: Yes, but that uniformity of cars -- one of the things they were talking about in 1983 was well, maybe we

could borrow some cars from Toronto, or Montreal, or Atlanta, and then that just wouldn't work because they were too different.

GENERAL DODGE: Well, BART has a powered car on each end of the train, and cars in between it don't have power. Ours were all powered, but you have to have a pair to make the unit.

MR. SCHRAG: Another big annoyance that seems to have gone back to your dealings with other groups -- let me hold that for a second. You said that the board had to approve contracts over \$100,000, and that with this one Westinghouse contract, they actually wanted to hear what the contractor had to say. In other cases, though, you've got a bunch of politicians from different counties in the District, lawyers, and real estate types who don't -- I'm not sure if any of them had any kind of technical background. Were they really able to offer informed input on these contracts?

GENERAL DODGE: Not any technical, I don't think. I think their job primarily is to be sure we were doing our job like we should. They felt comfortable that I was doing what I was supposed to be doing, and I think I had good credibility with all the board members, especially Cleatus Barnett. He would quickly move to approve my projects. But it was just to make sure that we were doing what we were supposed to be doing, establish our credibility.

MR. SCHRAG: And how does that work? That is, how does an engineer show to a lawyer that he is doing his contracting right?

GENERAL DODGE: I don't know. I tell him what the problem is, tell him what I recommend we do about it, and why I recommend we do that, and primarily it's, I think, a matter of do they believe what I'm telling them.

MR. SCHRAG: I mean, the thing is I haven't hit any examples of the board being skeptical. What does happen, though, in the 1970s is that other people start complaining about Metro, particularly the Ford Administration. Eventually, they ordered the alternatives analysis. But even while they're doing that, asking whether it should be built at all, even while they're doing that, they order a review of a lot of the engineering practices. On some of the routes, do you really need to line the tunnels? Can we leave them unlined? Are the stations the right shape? They go back to the box design.

GENERAL DODGE: Box versus the arch.

MR. SCHRAG: Yes. And so whereas the WMATA board trusted you, it seems that the Urban Mass Transit Administration, under [Robert E.] Patricelli, essentially did not, and that certainly a lot of the economists around town started complaining about how much Metro costs. So I just wonder how these

professional -- there are all these professional divisions -- engineers, economists, politicians -- how they can really talk to each other and decide whether things are being done in the most appropriate way?

GENERAL DODGE: I don't know how to answer that. Some people, I think they are hired to do a job, so they've got to make a job to do. Maybe some of them came from the New York system and wondered why ours had to be a little fancier than the New York.

I remember Jimmy Carter said we were grossly over-designed. I don't know how he came to that opinion.

MR. SCHRAG: Right. That's exactly what I'm trying to understand.

GENERAL DODGE: When he said it, that was my reaction. How the hell does he know it's grossly overdesigned?

MR. SCHRAG: And what does grossly overdesigned mean? I mean, that's sort of --

GENERAL DODGE: They were building a Cadillac when a Chevrolet would be adequate, that sort of thing. I think everybody is happy with it now.

MR. SCHRAG: There are always critics, I can tell you that. I'm not one of them, but, you know, some people don't believe, for example, that a Cadillac will last longer than a

Chevrolet, among other things. And then there are those people who say it's not expensive enough, that you should have waterproofed the Red Line tunnels better.

GENERAL DODGE: Yes, that's true now. When we did those tunnels, shotcrete was quite the thing. The belief was and the theory was that the rock will support itself if you can get it fixed in place quickly. They sprayed -- put some ribs and lagging in it, sprayed concrete. You're right, it does leak pretty much.

MR. SCHRAG: So was that just a question of --

GENERAL DODGE: Well, that was the -- that was state of the art, you might say, at that time. Now they have this Austrian tunneling system which I don't know all the details of, but apparently it's working very well.

MR. SCHRAG: That came in after you left.

GENERAL DODGE: Yes.

MR. SCHRAG: So the rock tunnels on Connecticut Avenue, some of them were just blasted out in the way not very different, it seems, from the way they did the Transcontinental Railroad in the 1860s.

GENERAL DODGE: Probably. Drill and blast, and spray with concrete. And then they got this big boring machine which does pretty well.

MR. SCHRAG: And that was a very new thing, right?

GENERAL DODGE: Yes. As far as I know, it was not available when we did the first tunnel.

MR. SCHRAG: How much of that section was bored and how much was blasted? Do you have just a general sense?

GENERAL DODGE: No. Well, all the way up Connecticut Avenue was drill and blast, as far as I know. And across the Potomac River to Rosslyn was all drill and blast.

MR. SCHRAG: Do you recall any dealings with the National Park Service, because it has come up, it seems, as an agency that was very hard to negotiate with.

GENERAL DODGE: Railroads and the National Park Service were our big nemeses, the dog in the manger. They were there, and why should they do anything really? Farragut Square - - we wanted to have an over and under station there. They would not allow us to open up Farragut Square, even though we had promised to put it back just like it was. So we ended up with Farragut North and Farragut West. And every time we had any dealings with going up Connecticut Avenue, we wanted to go across Rock Creek, suspended below the Taft Bridge there. But they insisted that it would be unsightly, and that we go under Rock Creek, which we did. Well, that lowered the tunnel way down and

made all those stations very deep. They were, in my judgment, unreasonable.

And the railroads, they held us up on everything we wanted to do.

MR. SCHRAG: Really? I didn't know about that. Which cases? The B&O Line?

GENERAL DODGE: Yes, the B&O. Well, I say they held us up, they were hard to get an agreement with. Going through the yards above Union Station, we had a lot of negotiation with them to get -- we had to build them a new maintenance shop.

Let me check on my wife. She's a Parkinson's case.

[pause]

MR. SCHRAG: We are resuming. So the railroads and the National Park Service were particular headaches.

GENERAL DODGE: They were hard to deal with.

MR. SCHRAG: The National Park Service also had jurisdiction over Union Station, and that seemed to have been almost -- I mean, it seems to me that Farragut and Union Station in particular were big headaches with them. I mean, they were headaches at Rock Creek Park, and Judiciary Square, and elsewhere, but Farragut because they kept you from building the transfer station, and Union Station because they kept changing the designs for the visitor center.

GENERAL DODGE: Yes, that's right.

MR. SCHRAG: And as I understand it, all the rails from the system were going to come in by railroad and go underground at that portal. Is that right that the rails were coming in by flat car?

GENERAL DODGE: Yes, from north of Union Station, and be snaked into the tunnels from there.

MR. SCHRAG: I saw a photo of that in the Metro Memo, and it seems -- am I right that the rails were already welded into pretty long segments?

GENERAL DODGE: Yes. The rails were produced in 40 foot or 60 foot sections at the plant, and then they were what we call shop-welding. At the plant they shop-welded them into 1,000 foot lengths. So when they arrived to us, they were 1,000 feet long, and they had to be snaked in.

MR. SCHRAG: And so when a train full of these rails goes around a curve, the rails would just bend with the train?

GENERAL DODGE: Yes. That long, it's like a piece of spaghetti.

MR. SCHRAG: Okay. I just don't think of steel moving in that way, but I'm not an engineer. So where were they manufactured?

GENERAL DODGE: Bethlehem Steel, I guess Bethlehem, Pennsylvania. Somewhere up there.

MR. SCHRAG: Okay. Unless it was in Baltimore or something. But I'd love to figure that out.

GENERAL DODGE: Yes, they have enough flexibility when they're that long.

MR. SCHRAG: One thing that I've noticed with both Graham and Mathe in the interviews I've read with them is they both have these important jobs in Washington. The District of Columbia was majority African-American, and they seemed to have had some trouble, not that they were racist, just that they didn't really know a lot of black people, and had somewhat stereotyped views, and I wonder if you could tell me something about, again, the Corps of Engineers culture in that regard.

I know that you had commanded some black units prior to World War II, but were there any officers, any black officers high up in the Corps, or was it a pretty --

GENERAL DODGE: No, there were not. No. But I don't know where you get the opinion that they had some racism. I don't know.

MR. SCHRAG: Oh, I wouldn't say it was racism. It seemed to me more unfamiliarity; that is --

GENERAL DODGE: Well, you know that the District government back then was a commission type -- had three commissioners, and the engineer commissioner was a Corps of Engineers officer. He had all the public works. And then Mr. [Walter] Tobriner was -- I guess he was the chairman, wasn't he? And I don't know who the others were. But Schuyler Lowe, who was our executive officer and controller, came from the District, and he had been what you might call chief of staff to this triumvirate over there, which the District operated under that triumvirate for decades -- forever, I guess.

And then they went to an appointed city council and mayor, and then finally to an elected city council and mayor. The third element -- we were talking about the Park Service and the railroad -- the third element was getting permits from the District. That was very onerous.

I'll tell you one little instant. We were having a great deal of trouble getting a permit for some construction. So Schuyler Lowe and our director of construction went over to see the head of the permit department. I don't know whether he's still there or not. I won't mention his name anyway. And Schuyler -- he was there when Schuyler was the big dog, chief of staff, and Schuyler explained to him what our problem was, and this guy said, "Well, Mr. Lowe, it used to be yes, Mr. Lowe, and

no, Mr. Lowe. But it's different now. I'm in charge." So that was your reverse racism, if you want.

MR. SCHRAG: Exactly. There seems to have been that tension there, and I'm not saying it was racist. I'm just saying that on the one hand you have --

GENERAL DODGE: Well, this new guy was black and Schuyler was white. I don't know whether that had anything to do with it or not.

MR. SCHRAG: The Corps of Engineers was always used to getting its way. I mean, you had your public hearings, I understand, but ultimately those Corps projects that you worked on -- the Everglades and the Great Lakes -- they went through. And then you have this city, the District of Columbia, that for the first time ever the African-Americans in the city were getting their way. And so there's that real sort of --

GENERAL DODGE: I don't think the African-American was an issue there. I don't sense that at all. Even after they came in with Mayor Washington, we got along well with Mayor Washington. But some of the people who had been an underling were now in charge, and they were exercising their power and authority.

MR. SCHRAG: So was it much harder to deal with the District government than the suburban jurisdictions. Obviously, you were doing more construction in D.C., but --

GENERAL DODGE: It was after some of these people became in charge who had been subordinate before.

MR. SCHRAG: And have something to prove.

GENERAL DODGE: Yes, they wanted to prove that they were now in charge. It's not yes, Mr. Lowe, and no, Mr. Lowe. You've got to get my approval.

MR. SCHRAG: Yes. And it seems that part of that is they didn't just have something to prove to themselves or to you. They had something to prove to their constituents.

GENERAL DODGE: The people, yes.

MR. SCHRAG: And, for example, well, I don't know what the worst cases were. I mean, one of the things was the District of Columbia actually canceled the station at Oklahoma Avenue near the stadium.

GENERAL DODGE: I don't remember that.

MR. SCHRAG: And then a lot of those stations in the eastern part of the city, they reduced parking quite a bit because they didn't want all the suburbanites coming in. Were there other particular conflicts that you remember with the

District government? Graham complained of indecision, that they just wouldn't settle on something.

GENERAL DODGE: Well, that's my impression was indecision. I know on fare structure there was quite a D.C. versus urban debate. That's why we have such a complicated fare structure.

But when I was there, I got along famously with Walter Fauntroy, and Sterling Tucker, and Jerry Browne, all the black members of the board. I got along well with them. No problem. Jerry Moore, not Jerry Browne.

MR. SCHRAG: That's interesting because it seems that Graham had some of his most difficult fights with some of those D.C. members, and again, it was this issue of his feeling that he wanted a decision made just like with any of these other issues. He liked to have his decisions made and kept, whereas the District government wanted to make sure that every neighborhood was agreeing to what would be done.

GENERAL DODGE: That probably was the case then.

MR. SCHRAG: And then, of course, I mean, they weren't just the black neighborhoods. There were the white neighborhoods, for example, on Yuma Street that held you up.

GENERAL DODGE: Yes, I remember there was a scientist up there -- I've forgotten his name -- who was an acoustic

expert, and worked for the Navy as I recall. He gave us quite a hard time about the noise. That's when we went across Yuma Street from Connecticut, over to wherever.

MR. SCHRAG: Those were all the specific questions I have. My general questions are what do you think Metro's greatest successes were, and its greatest flaws? I mean, we talked, for example, about the water, and the Red Line tunnels as something that just hadn't been -- better waterproofing just wasn't available to you when you were building those tunnels. Are there other things that you think Metro did badly?

GENERAL DODGE: I would certainly admit it if I can think of it. Well, we had these accidents, the flooding and the cave-in. They were unfortunate. I don't know -- I don't see that we did anything, or failed to do anything, that would have prevented it. The contractor in the cofferdam failure was driving them and hit a rock and they split. So I don't know how you could have prevented that.

MR. SCHRAG: Driving piles?

GENERAL DODGE: Sheet piling. They are these flat sheets with, you know, they made a chain of them, made a big dam, and were driving it down and they split on a rock, and water scoured underneath.

On the cave-in, again it was that fractured rock, and they dug down. Perhaps they didn't bolt it adequately enough, but one corner slid off and let the side wall cave in. I don't know how to answer that question. It is certainly a pleasant system and well received, when it's running right. I'm proud of it.

MR. SCHRAG: Any particular things that you're proud of, I guess is my question.

GENERAL DODGE: The clean appearance, the smooth ride, and just the whole thing. I don't know about things that we should have done differently. Anything you did, you could have done it better.

MR. SCHRAG: What do you think -- as I said, I really want to get Jack Graham's role in all of this right. As I said, he wasn't really mentioned at the Branch Avenue ceremonies, but I'm trying to -- a lot of people have said to me if it hadn't been for Jack Graham, this thing would have fallen apart and wouldn't have been built.

GENERAL DODGE: I don't know that it would have been built if it hadn't been for his drive.

MR. SCHRAG: So what exactly does that mean? How do I explain, or how do I understand what he contributed, what would have happened without him?

GENERAL DODGE: Well, probably what happened for the ten years before he came: a lot of studies and debates, and more studies and more debates, and maybe still be talking. With Jack, when they make a decision, let's move. Let's keep moving. Don't get distracted.

MR. SCHRAG: And he could bring other people with him on that?

GENERAL DODGE: He brought me with him. I was all for him. I'm a great admirer of Jack Graham. He may have been so determined and aggressive that he was stubborn, I don't know. A number of things that he really clung to that he probably shouldn't have. Having all the signs vertical, I don't think that quite did the job, and they had to go to the horizontal. The lighting, I think, was too subdued in an attempt to get indirect lighting ambience.

MR. SCHRAG: That's the thing, it's somewhat easier to see his determination where he went a little too far, than where he got it just right. And maybe it was just those motorcycle tours, letting every contractor know that someone was watching their work. But something -- something that he did really seems to have kept the board together, kept the contractors on schedule, kept the morale high.

I mean, when you were working there, was it a fun place to work?

GENERAL DODGE: Oh, I thoroughly enjoyed it, yes.

MR. SCHRAG: You got up in the morning and said, "I'm going to go out and build more."

GENERAL DODGE: And good morale -- he was a great one -- we had a lot of baseball picnics, baseball games, bowling leagues, cocktail parties. It was a good morale, good esprit in the outfit. He -- I think he was quoted -- referred to some of the board members as being little politicians. That didn't go over very well.

MR. SCHRAG: So he had that abrasive edge to him. And some people that didn't work with, but, I mean, the staff people I've talked to, they just adored him. That is, one of the things that a couple of people have said to me is that if they did something wrong, Graham would take them aside and let them know they had done something wrong.

But then if it came before the board, he would defend them 100 percent, and that was one way that he really built loyalty, was that he wouldn't criticize anyone in public.

GENERAL DODGE: Well, if there were any mistakes, he would accept full responsibility for anything that went on. What

sensing have you gotten? Have you found people who didn't like Jack?

MR. SCHRAG: Well, you know, it's a public record of some of the criticism that he got from board members. Certainly the people who sued you. I've talked to two plaintiffs, Richard Heddinger, who sued over the wheelchairs and got the elevators put in, and then I talked to one of the guys on Yuma Street, and this was a man -- the Yuma Street plaintiff named [Joseph] Saunders. He was a Justice Department lawyer, fairly senior. He was used to people listening to him, and he felt that WMATA as a body was not very responsive to his concerns, and finally got a meeting with Graham, and everyone sits down around the table, and Graham sits down, and he says, "Well, we on Yuma Street would like you to put in some more noise insulation, whatever, floating track, whatever it is. And Graham said, "How much would that cost, gets an answer, "that's too expensive," and walks out of the room. So there's someone who really didn't like Jack Graham.

GENERAL DODGE: I can't believe Jack would do that.

MR. SCHRAG: Well, that's the thing. It seems very consistent; that desire to have the decision made seems very consistent with his character, and that for someone who was within the organization, you would think well, this is great. We're getting the job done, we're making the decisions quickly.

And for someone who is sitting there on Yuma Street and there is a subway coming through under his front yard --

GENERAL DODGE: And he's being ignored.

MR. SCHRAG: -- and he's being ignored, that's a very--

GENERAL DODGE: Did Saunders sue?

MR. SCHRAG: Yes, and he won.

GENERAL DODGE: What did he win?

MR. SCHRAG: He won -- was it that case? It might have been that case that said that you had to do environmental impact statements. But certainly he won -- what he won on Yuma Street was he got floating slabs 100 feet down in the rock. When you built the vent shafts, you said you dug up the shaft so that there wouldn't be dump trucks going through the neighborhood. If you go to that vent shaft on Yuma and Reno, all you see are azaleas. They're planted all around there. You've got a lot. And when someone's plaster cracked in the house because of construction, that plaster got painted over real quick. And when you did knock down a house, that person went from a three bedroom house to a four bedroom house.

So that plaintiff got a lot, and the reason he got so much, he would have been willing to settle for less if Jack Graham hadn't ticked him off. That's my impression.

GENERAL DODGE: If I knew all that, I've forgotten it.

MR. SCHRAG: Okay, that's why I want to show both sides of Jack Graham, and the big picture here, which I'm sure you understand given your career in the Corps and at Metro, is that it's hard to do big engineering projects in a democracy. If you let everyone have a voice --

GENERAL DODGE: You never get going.

MR. SCHRAG: You never get going. And if it's just three engineers in a room making all the decisions, that's not democratic anymore.

So I'm trying to explain that tension, and all these public hearings, environmental impact statements, the board checking over your contracts, Congress getting involved, people suing you -- it's all part of this really difficult process.

GENERAL DODGE: Well, do you think if we started today and tried to build a system in Washington we could do it?

MR. SCHRAG: You could. It would cost tens of billions of dollars. I mean, that's what is happening in Los Angeles.

GENERAL DODGE: Could we ever get started even?

MR. SCHRAG: Well, I don't know. In Boston with the Big Dig, it's sort of the same thing. I guess they started talking about that around 30 years ago and it won't be done for another 10. So yes, what do you think of that? I mean, have we

gone too far in putting restrictions on engineers and what they can do?

GENERAL DODGE: I don't know, I'm glad we started in 1967 instead of today.

MR. SCHRAG: And do you think there was a moment where it really got difficult, or was it just gradual, gradual, gradual?

GENERAL DODGE: I think it was gradual.

I maybe shouldn't mention this, but I was in the Jacksonville District when we were building the central and southern Florida flood control project. That was the big project of the district. I don't know whether we had Puerto Rico and Panama or not. And today I understand they're tearing it all out.

MR. SCHRAG: Yes.

GENERAL DODGE: Undoing what I was doing.

MR. SCHRAG: And the same thing in Boston, you know, they put in the central artery and now they're trying to bury it underground, and they're talking about burying some of the freeways here.

A lot of the big engineering projects of the '50s and '60s --

GENERAL DODGE: Florida is a case of environmental taking over from -- we were trying to preserve the farmers in Florida, and the deer were drowning in the summer, and the alligators were drying up in the winter. We were trying to manage nature for them. But now I understand they're putting it back like it was.

MR. SCHRAG: So what do you make of that? Do you think it was a mistake to do the flood control to begin with, or is it a mistake now to undo it?

GENERAL DODGE: Well, at that point in my career, I was not at the decision making level, and I did not see this. I wasn't fully aware of all of the planning that went into it. When I got there, I was executing -- executing a plan that had already been decided on. But I assumed it was a good plan, a sound plan. But apparently it's not, is somebody's view now. They've taken it all out.

Well, I hope I've given you a little bit -- I don't know if there's anything there profound.

MR. SCHRAG: This is wonderful. It's been extremely helpful. Thank you very much. I'll stop the recording now.